Misconceptions about HIV infection in Kinshasa (Democratic Republic of Congo): a Case-control Study on knowledge, attitudes and practices

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HIV infection; HIV Seropositivity; HIV transmission; Health knowledge, Attitudes,

Practice; Sexual behaviour; Democratic Republic of the Congo

ABSTRACT

Objectives: To evaluate the prevalence of HIV-related misconceptions in an Outpatient Centre of Kinshasa (D.R.Congo) and analyze the association between these beliefs and HIV infection.

Methods: A case-control study was carried out from December 2010 until June 2012. We assessed 1,630 participants aged 15-49 attending a primary outpatient centre in Kinshasa: 762 HIV Voluntary Counseling and Testing attendees and 868 blood donors. A 59-item questionnaire about knowledge, attitudes and practice was administered during a face-to-face interview, followed by an HIV test. Cases and controls were respondents with a newly diagnosed HIV positive or negative test, respectively. Unconditional logistic regression was used to analyse the association between misconceptions and HIV seropositivity.

Results: Two hundred and seventy four cases and 1,340 controls were recruited. Cases were more likely than controls to have a low socioeconomic status, no education, to be divorced/separated or widowed. An association was found between the following variables and HIV-seropositivity: having a poor HIV knowledge (adjusted OR=2.79; 95%CI:1.43-5.45), not knowing a virus is the cause of AIDS (adjusted OR=2.03; 95%CI:1.38-2.98) and reporting more than three HIV-transmission-related misconceptions (adjusted OR=3.30; 95%CI:1.64-6.64), such as thinking an HIV+ person cannot look healthy and that HIV is transmitted by sorcery, God´s punishment, a kiss on the mouth, mosquitoes, coughs/sneezes or undercooked food.

Conclusion:Despite having access to health care services, there are still many people in Kinshasa that have HIV-related misconceptions which increase their HIV risk. Our findings underscore the need for a culturally-adapted and gender-orientated basic HIV information into Congolese HIV prevention programs.

INTRODUCTION

The Democratic Republic of the Congo (DRC) was one of the first countries in which HIV infections were registered. Today over 2 million people still suffer from this disease in Congo, a country with a prevalence of 1.2% in the general population, 1.6% for women and 0.6% for men.[1]

The main HIV transmission route in Congo is heterosexual contact.[2] Sexual behaviours have been linked to HIV-related misconceptions.[3] Studies that have analyzed the prevalence of misconceptions in Congo have mainly been qualitative and previous to the introduction of antiretrovirals.[4-9]

We quantitatively evaluated the HIV knowledge of local people in Kinshasa and studied its association with HIV seropositivity.

METHODS

From December 2010 to June 2012 we carried out a prospective case-control study at a referral hospital in Kinshasa. The study participants were people aged 15-49 attending the outpatient center for HIV-Voluntary-Counseling-Testing (VCT) or blood donation. Participants with a previous HIV+ test and pregnant women were excluded. Cases were VCT-attendees/blood donors with an incident HIV+ test over the study period. Controls were recruited from the same source population but tested negative for HIV. Based on the around 1,000 annual candidates, with near 15% being HIV+, and considering the adjustments for about 10 confounding variables, we were confident that the final sample size would provide sufficient statistical power.

Before the HIV test, participants completed a questionnaire during a face-to-face interview, to evaluate HIV-related knowledge, attitudes and sexual behaviours. Afterwards, the presence of anti-HIV antibodies was analyzed using the Determine®HIV-1/2 test and DoubleCheckGold® and Unigold® if positive.

Statistical analysis was done with Stata12.0. Participants with "indeterminate" HIV results were excluded. Multivariate unconditional logistic regression was used.

The study was approved by the corresponding Ethics Committees (CE/010/04; UN 108/2010). Oral informed consent was obtained.

RESULTS

All but two eligible participants were included in the study: 274 cases and 1,340 controls (Web only Figure 1). Most participants were 25-49 years-old and the median age of the cases (34.9, 14.8-49.8; 13.4) was higher than that of the controls (27.2, 14.7-49.8; 10.8). Cases were more likely to be female, but no statistical association with HIV-positivity was found for this variable (Table 1). The great majority of the cases came from the VCT group, which was strongly associated with receiving a positive HIV diagnosis. In addition, having a low socioeconomic status, no education or being illiterate, belonging to the Revivalist/Awakening Church and being separated/divorced and widowed were associated with HIV infection. .

Overall, most participants showed a poor HIV/AIDS knowledge and a high prevalence of HIV-related misconceptions was observed, such as believing HIV+ people cannot look healthy or that HIV is a punishment from God or is transmitted by sorcery, mosquitoes or kissing on the mouth (**Table 1**). An independent association was found between having little or no AIDS knowledge and being HIV-positive, being unaware of the viral origin and having 1-3 or 4-7 misconceptions about HIV transmission.

Regarding HIV prevention, when knowledge about condom efficacy, over one third of the participants believed condoms completely avoid HIV, a misconception that was less prevalent among cases. A high percentage of the participants believed there is no risk in having multiple partners if condom is always used, with no significant differences between cases and controls. Regarding individual HIV risk perception, reporting a high

risk was strongly associated with HIV-positivity. However, they were less likely to use condoms to prevent HIV, regardless of whether they/their partner were infected.

DISCUSSION

To the best of our knowledge, this is the first quantitative study to analyze the association between HIV-related misconceptions and HIV status in Congo. We detected a high prevalence of HIV-related misconceptions in Kinshasa and a positive association between these and HIV infection.

In agreement with previous Congolese studies, most participants had heard of AIDS. However, 64% of our respondents acknowledged having little/no HIV knowledge, which was more prevalent in cases.

Around 15% of the participants were unaware of the viral basis of AIDS, which was associated with an HIV+ test. This has never been evaluated in Congo and has only been addressed in a handful of African studies. Given that infectious origin of AIDS was first described three decades ago, providing this basic information should be a priority. Also, erroneous beliefs involving supernatural forces were particularly prevalent among both cases and controls. The 2007 DRC-Demographic Health Survey reported that half of the respondents held this belief,and the recently published 2014 survey keeps showing that near the same percentage continue to believe in supernatural transmission.[1] These misconceptions are similarly prevalent in Ghana and South Africa, and even more in other African countries.[3,10] Skepticism about the role of infectious agents leads people to believe that HIV can only be cured by traditional healers, and not by antiretrovirals. We need to be aware of these beliefs in order to develop culturally-adapted HIV information. Moreover, as religion is an important part of daily life in Kinshasa[11], close collaboration between religious leaders and HIV prevention programs is necessary to ensure success.

Another highly prevalent misconception was believing that an HIV+ individual is visibly unhealthy. Nearly half of the cases held this, a significantly larger proportion than in the control group. The 2014 DRC Health Survey reveals that around 30% of 15-24 year-olds do not know that a healthy person can be seropositive.[1] If people believe that only those visibly unhealthy can transmit HIV, the infection risk can increase. Around 10% of our participants believed that HIV could be transmitted by mosquitoes (more cases than controls). Comparing with previous data from Kinshasa[4,5] the prevalence of misconceptions has decreased considerably.

Regarding the misconceptions we found about HIV prevention, it is important to consider them in condom promotion campaigns in Africa, where the prevalence of multiple partnerships is on the rise in some countries and condom use is inconsistent.[12] Indeed, only around 30% of our HIV-positive cases said they would use a condom if they/their partner were infected.

Basic socio-demographic determinants also need to be considered. First, education is crucial to change misconceptions. Cases were more likely to have no education or primary education only, and reported more misconceptions than controls. It is thus crucial that accurate information reaches people from all educational levels.

In addition, the economic context must also be considered: some African studies have shown that a high education level is sometimes linked to HIV-related risk behaviours or even a higher rate of infection[1], as those with the highest economic status may have a higher frequency of premarital sex or access to commercial sex.

Another factor that must be considered is sex: women in sub-Saharan Africa are particularly vulnerable to HIV due to low socioeconomic status/educational level, few job opportunities, limited access to health services or forced sex, frequently associated

with an increased HIV risk.[2] As cases in our study were mostly women, special attention should be paid to this group when developing prevention campaigns.
All these findings, and the fact that around 40% of participants consider that little information on HIV prevention is available in Kinshasa (more cases than controls), underscore the need for culturally-adapted and gender-orientated basic information in Congolese HIV prevention programs. Current HIV campaigns in Congo do not include any messages to clear up common misconceptions. This information should be provided in Lingala, the language people use to speak about intimate/taboo issues. The most effective information channels must also be identified. Most of our respondents, particularly cases, had regular access to a radio/TV, which could both be used to send preventive messages. Visits to health services for VCT/ blood donation provide useful opportunities to inform about HIV/AIDS, to offer testing and provide antiretrovirals for those who test positive.

The present study has some limitations. The study population is probably not representative of the general population, especially VCT-attendees that are likely to be at higher risk of HIV and potentially have a better HIV knowledge. However, even in our participants we observed a low level of knowledge, which would likely have been poorer still if we had recruited from a general, non-HIV-specific health clinic. Nonetheless, what made them think they were at risk should be further analyzed. On the other hand, family replacement blood donors are more similar to the general population because the only reason for going to the health center is that they are requested to do so to give back the blood used by their relatives. Secondly, our study is based on self-reporting. Nonetheless, under-reporting was probably low as same-sex interviewers and private rooms were available. Also retrospective responses could have led to recall bias, however, most questions were specific enough to reduce errors. Lastly, we did not use a validated scale to measure HIV knowledge. The HIV-Knowledge-27-Scale, specifically

suited to sub-Saharan populations, was not available when we implemented our questionnaire.

Despite these limitations, our study has several strengths. This is the first analytic study in the DRC to evaluate knowledge, attitudes and sexual behaviour of individuals newly diagnosed with HIV. Also it has assessed many HIV-related aspects not considered in other Congolese studies. Finally, we had a high response rate and recruited 1,614 Congolese, a sufficiently large sample with which to estimate relevant adjusted associations.

This study provides evidence of the high prevalence of HIV-related misconceptions and their association with HIV. There remains a great need to challenge these misconceptions, tackling them one by one, through media/HIV campaigns and hospital visits. People that attend health services are useful participants in which to evaluate HIV-related knowledge and behaviours, as they can transmit preventive messages to people within their community without access to health facilities, influencing knowledge and behaviour.

Key messages
➢ Most participants (VCT attendees and blood donors) had heard of AIDS but 64% acknowledged having little/no HIV knowledge. ➢ We observed a high prevalence of HIV-related misconceptions:believing, all HIV+ people look unhealthy or that HIV is a divine punishment or transmitted by sorcery. ➢ Having little/no AIDS knowledge, being unaware of the viral origin of AIDS and having 1-3 or 4-7 misconceptions about HIV transmission is associated with HIV infection. ➢ Current HIV prevention campaigns in Kinshasa do not include messages to clear up common HIV-related misconceptions. VCT/ blood donation are useful opportunities to inform about HIV/AIDS.

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Competing interests

The authors have no competing interests to declare.

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Authors´ contributions

SC, the study principal investigator, supervised all phases of the study, conducted literature review, the statistical analyses and wrote the first draft of the manuscript; MAM contributed to statistical analyses and writing the paper; EB, the local study coordinator, participated in all the phases of the activity, helped with the questionnaire´s translation and helped write the article; CLB helped with statistical analyses and helped write the article; MRC provided advice on ethical aspects and helped write the article; AN helped with the questionnaire´s translation and with the local activities and revised the manuscript; LT helped with the questionnaire´s translation, contributed to ethical aspects and revised the manuscript; PT helped with the questionnaire´s translation and with the local activities and revised the manuscript; PL contributed to the questionnaire development and critically revised the manuscript; JI helped with the study design as well as other epidemiological aspects, statistical analyses and helped write the article. All authors read and approved the final manuscript.

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Table 1. Characteristics of cases and controls and beliefs associated with HIV-positivity.

	Cases (N=274)	Controls (N=1,340)	Multivariate adjusted model[a] OR (95% CI)
	(%)	(%)	
Sociodemographic characteristics			
Age (25-49 years *vs* 15-19 years)	86.5	63.8	2.43 (1.21-4.86)
Sex (women *vs* men)	52.9	27.3	1.18 (0.84-1.67)
Study group (Voluntary Counseling and Testing *vs* blood donors)	81.7	39.5	7.6 (5.12-11.29)
Socio-economic status (low *vs* high)	47.1	32.7	2.10 (1.02-4.37)
Education level (no studies/illiterate *vs* high education level)	12.0	3.2	4.10 (1.88-8.94)
Religion (Revivalist/Awakening Church[c] *vs* others)	62.0	48.4	1.44 (1.05-1.97)
Marital status			
- Separated/divorced *vs* single	9.6	1.6	3.56 (1.79-7.07)
- Widowed *vs* single	11.4	0.5	10.64 (4.24-26.69)
			Adjusted Odds Ratios (95% CI)[b]
HIV knowledge and information			
Little/no AIDS knowledge	75.5	61.6	2.20 (1.11-4.37)
Unaware of the viral origin of AIDS	25.5	14.4	1.21 (0.77-1.90)
Believe that little information on HIV prevention is available in Kinshasa	47.4	34.7	1.10 (0.78-1.56)
Misconceptions about HIV and its transmission			
Believe that someone with HIV cannot look healthy	48.5	35.6	1.62 (1.18-2.23)
Believe that HIV is transmitted by sorcery	39.4	33.7	0.99 (0.71-1.37)
Believe that HIV is a punishment from God	25.5	28.0	0.76 (0.53-1.08)
Believe that HIV is transmitted when someone infected kisses you on the mouth	21.9	16.6	1.08 (0.73-1.60)
Believe that HIV is transmitted by mosquito bites	15.7	9.3	1.81 (1.12-2.93)
4-7 misconceptions about HIV transmission[d]	8.4	3.7	2.39 (1.16-4.93)
Attitudes related to condom use			
Believe that condoms avoid HIV infection	33.9	39.5	0.85 (0.62-1.17)
Believe that there is no risk in having multiple partners if condom is used	44.2	49.3	0.83 (0.61-1.13)
Would use condoms to prevent HIV	34.4	58.6	0.58 (0.42-0.80)
Would use condoms if they were infected	38.6	55.5	0.77 (0.56-1.06)
Would use condoms if partner was infected	21.6	37.2	0.64 (0.45-0.91)
High personal HIV risk perception	40.1	9.6	4.92 (3.39-7.14)

[a] Logistic regression model simultaneously adjusting for all the sociodemographic characteristics.

[b] All ORs are adjusted for age, sex, origin of the participants (VCT: Voluntary Counseling and Testing; BD: Blood Donors), education, socioeconomic status, religion and marital status.

[c] Revivalist Church ("Eglise de réveil"): Revivalist churches are groups that are often lead by independent or self-proclaimed pastors. Although Congolese are mainly Christians, this church is found throughout the Congolese territory, and is well consolidated.

d Misconceptions and myths (sum)= "HIV is transmitted by sorcery" + "HIV is a punishment from God" + HIV is transmitted by a kiss on the mouth" + "HIV is transmitted by mosquito bites" +"HIV is transmitted when someone infected coughs or sneezes" +"HIV is transmitted in undercooked food" +"People with HIV cannot look healthy".